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KEYS TO SUBORDERS AND FAMILIES OF TANAIDACEA (CRUSTACEA)

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Abstract.—A brief review is presented of the current status of the systematics of the Tanaidacea. Identification keys and illustrations are given to the suborders and families of the entire order.

Advances in the study of the Tanaidacea have been slow in comparison to the other commonly collected microcrustaceans from marine benthic environments. These small peracarids are usually abundant in benthic samples and often rank numerically above or near amphipods, isopods and cumaceans. Systematic problems have made identification of many specimens to species or even to family extremely difficult. Knowledge concerning the biology of most species is entirely lacking.

In an attempt to identify the tanaids collected as part of the Southern California Baseline Study and Analysis: Benthic Macrofauna (University of Southern California—U.S. Bureau of Land Management), the authors have searched for clearly distinguishable and reliable characters to separate the species. These characters are presented here in the identification keys to the suborders and families of the entire order Tanaidacea worldwide. Additional keys, new species descriptions and comments on distributions of the southern California tanaidaceans will be presented in subsequent papers, each of which will deal with the members of one or more families. This paper is Allan Hancock Contribution number 366.

The order Tanaidacea Hansen 1895, was divided by Lang (1956) into two suborders: Monokonophora and Dikonophora. Sars' (1882) Tanaidae may be regarded as equivalent to the former and his Apseudidae as equivalent to the latter.

Monokonophora

At present, 8 families are commonly accepted in the Monokonophora: Apseudidae, Leiopidae, Metapseudidae, Kalliapseudidae, Apseudellidae, Pagurapseudidae, Cirratodactylidae and Tanzanapseudidae. Gutu (1972) fused the families Apseudidae and Leiopidae into a single family (Apseudidae) and proposed subfamilies within it, and other subfamilies within the families Kalliapseudidae and Metapseudidae. He also proposed the new family Apseudellidae for the exceptional *Apseudella.* We follow Lang (1970) and accept the family Apseudellidae but not Gutu's proposed subfamilies. Such subfamilies may be warranted should more extensive studies

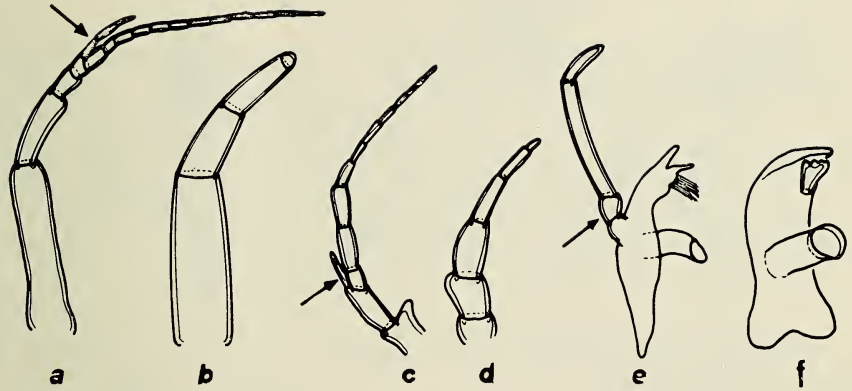


Fig. 1. a, c, Antenna 1 (and usually 2) with inner and outer flagellum (=biramous); b, d, Antenna with outer flagellum only; e, Mandible with palp; f, Mandible without a palp.

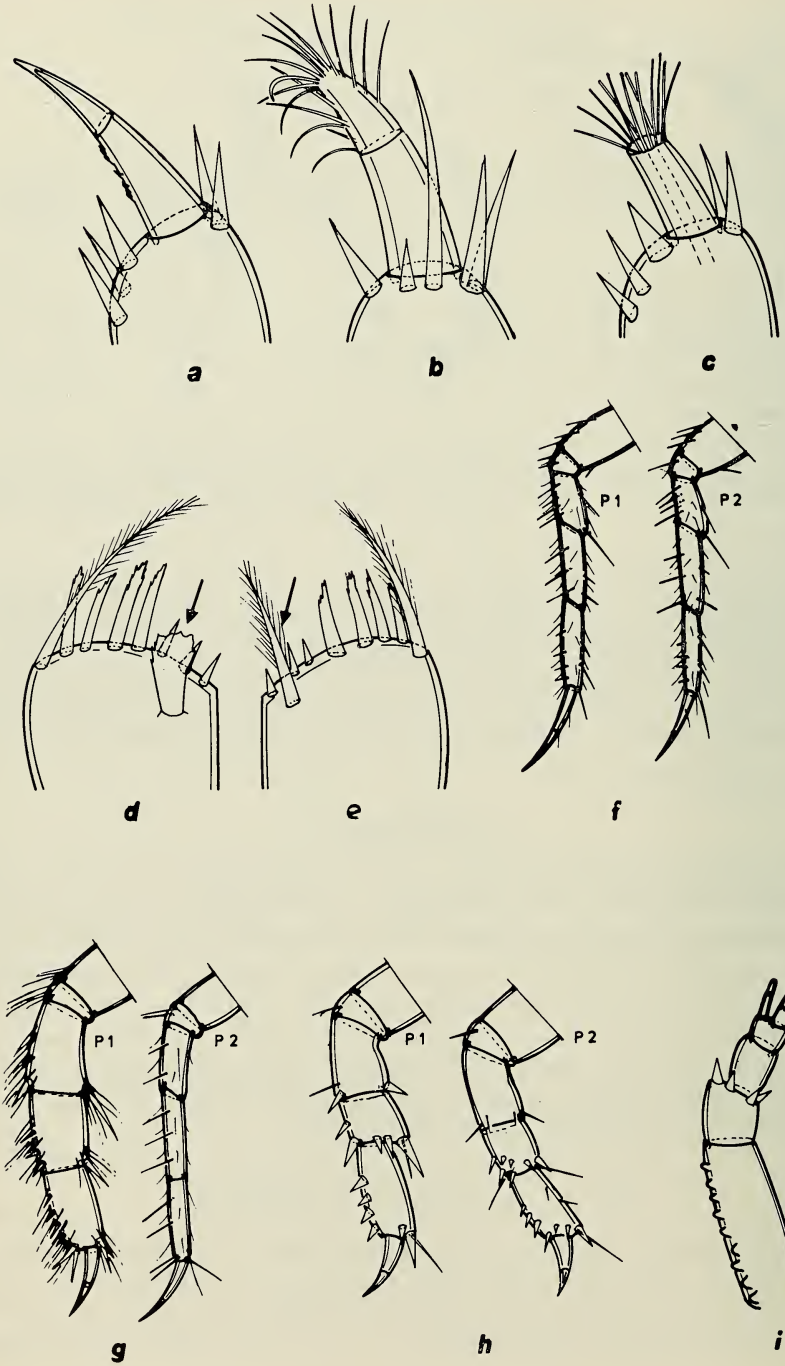
provide evidence of probable phylogenetic lines within the suborder. Another family, Tanzanapseudidae was recently created (Bascescu, 1976) for the genus *Tanzanapseudes* from Tanzanian waters. Although no diagnosis was given, some note was made that it may be related to Metapseudidae but possesses rather unique characters possibly justifying a new familial designation.

Dikonophora

There are at present 8 families in the Dikonophora: Tanaidae, Paratanaidae, Neotanaidae, Agathotanaidae, Anarthruridae, Leptognathiidae, Pseudotanaidae and Nototanaidae. When erecting the suborder, Lang (1956) included the already existing families Tanaidae and Paratanaidae as well as his new family Neotanaidae. He later (1970, 1971, 1973) separated 3 additional families (Agathotanaidae, Anarthruridae and Leptocheliidae) from the Paratanaidae. Sieg (1976) however, suppressed Leptocheliidae as a junior synonym of Paratanaidae and established 3 new families, Leptognathiidae, Pseudotanaidae and Nototanaidae.

Key to the Suborders of Tanaidacea

1. First antenna (and usually second) with inner and outer flagellum (Fig. 1a, c); mandible with palp (Fig. 1e) Monokonophora Lang
– First and second antennae with outer flagellum only (Fig. 1b, d); mandible without palp (Fig. 1f) Dikonophora Lang


a
b
c
d
e
P1
P2
f
P1
P2
g
P1
P2
h
i

Key to the Families of Monokonophora
(Modified from Lang, 1970)

1. Body extremely flattened dorsoventrally, produced into 31 long triangular acute expansions Tanzanapseudidae Bascescu
– Body not extremely flattened 2
2. Dactyl of pereopod I with esthetasc (Fig. 2c) Kalliapseudidae Lang
– Dactyl of pereopod I without esthetasc (Fig. 2a, b) 3
3. Dactyl of pereopods II–VI with a distal spine covered with strongly recurved setae (Fig. 2b) Cirratodactylidae Gardiner
– Dactyl of pereopods II–VI with distal spine not covered with recurved setae (Fig. 2a) 4
4. Pereopod I cylindrical, not more strongly expanded than pereopods II–VI (Fig. 2f) Pagurapseudidae Lang
– Pereopod I not cylindrical, more strongly expanded than the following pereopods (Fig. 2g, h) 5
5. Inner caudodistal seta of maxillipedal endite transformed into expanded scale (Fig. 2d) Leiopidae Lang
– Inner caudodistal seta of maxillipedal endite not transformed into expanded scale (Fig. 2e) 6
6. Pereopod I similar to pereopods II and III (Fig. 2h); flagellum of first antenna short, with few joints (Fig. 2i) Metapseudidae Lang
– Pereopod I distinguished from II and III by its flattened form (Fig. 2g); flagellum of first antenna not short, with many joints 7
7. Exopod of maxilla I with apically setose palp; epignath of maxilliped scale-shaped Apseudidae Sars
– Exopod of maxilla I without palp; epignath of maxilliped not scale-shaped Apseudellidae Gutu

Key to the Families of the Suborder Dikonophora Lang
(After Sieg, 1976)

1. Mouthparts reduced 2
– Mouthparts not reduced 3
2. Antenna 2 with 9 joints Neotanaidae Lang (males)
– Antenna 2 with 7 joints or less 4

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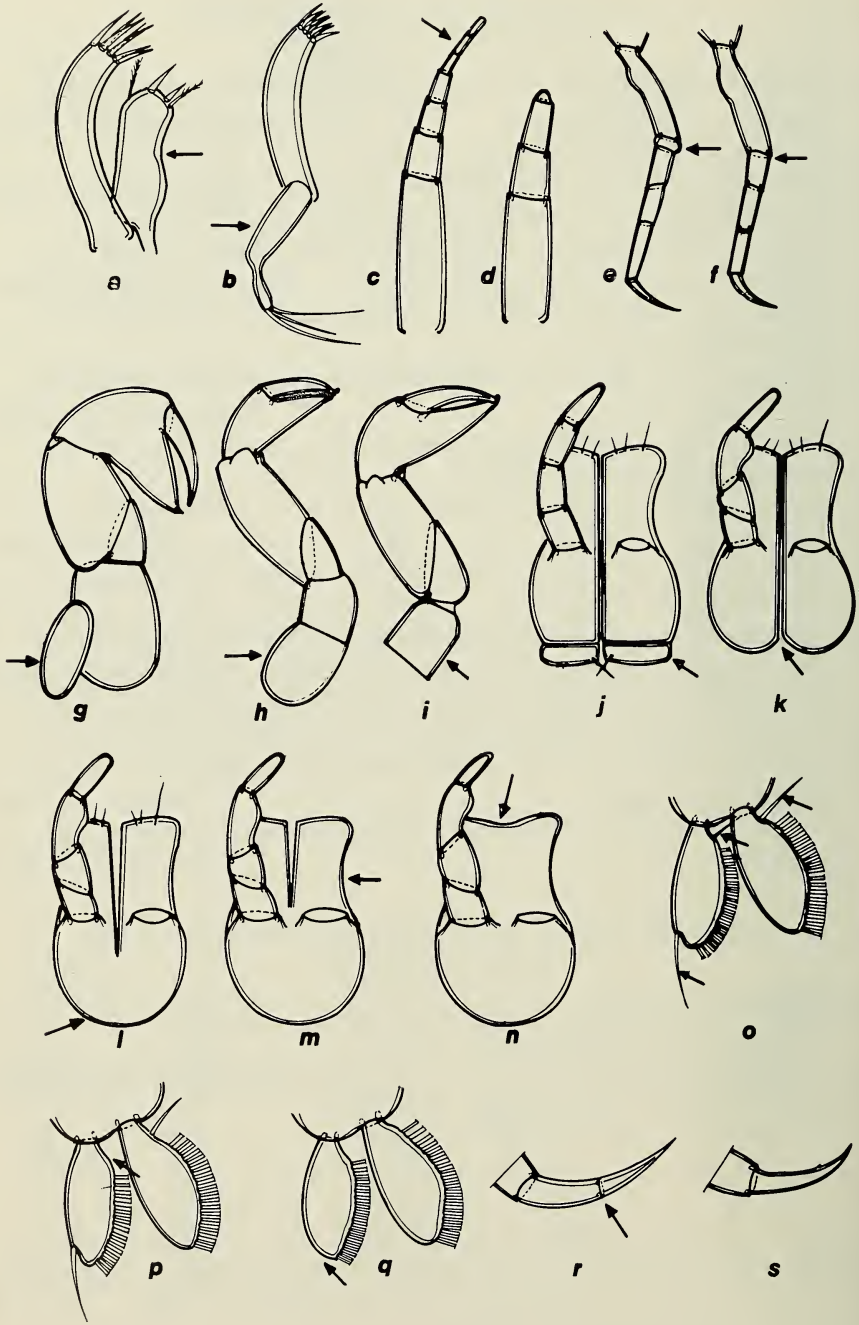
Fig. 2. a, Dactyl of pereopod 1 without esthetasc, with recurved setae; b, Dactyl of pereopod 1 without esthetasc; c, Dactyl of pereopod 1 with an esthetasc; d, Maxillipedal endite seta expanded; e, Maxillipedal endite seta not expanded; f, Pereopod 1 cylindrical; g, Pereopod 1 not cylindrical, flattened; h, Pereopod I cylindrical, similar to pereopods II and III; i, Flagellum of antenna I very short.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3. Maxilla 1 with inner and outer endite, without palp (Fig. 3a); antenna 1 with 3-jointed peduncle and 4- or 5-jointed flagellum (Fig. 3c) Neotanaidae Lang (females)
– Maxilla 1 with only outer endite and palp (Fig. 3b); first antenna with 3-jointed peduncle and 1- or 2-jointed flagellum (Fig. 3d) 4
4. Pereopods I–VI without ischium (Fig. 3f); uropods uniramous; maxilliped with coxa not fused to basis (Fig. 3j) Tanaidae Dana
– Pereopods I–VI with ischium (Fig. 3e); uropods nearly always biramous (consisting of peduncle, exopod and endopod; maxilliped with coxa fused to basis 5
5. Cheliped without coxa (Fig. 3i) Agathotanaidae Lang
– Cheliped with coxa (Fig. 3g, h) 6
6. Coxa of cheliped articulated with proximal margin of basis (Fig. 3h) Anarthruridae Lang
– Coxa of cheliped articulated with mediolateral margin of basis (Fig. 3g) 7
7. Basis of maxilliped (or its rudiments) not fused medially, without coxa (Fig. 3k); endopod of pleopods with 1 terminal seta on inner margin and with many seta (one very close to basis) on outer margin; exopod of pleopods with inner marginal seta near basis thick and irregularly plumose (Fig. 3o) Paratanaidae Lang
– Basis of maxilliped more or less fused medially (Fig. 3l, n); endopod of pleopods without marginal seta near basis (Fig. 3p); exopod with or without seta thick and irregularly plumose 8
8. Basis of maxilliped not completely fused (Fig. 3l) Leptognathiidae Sieg
– Basis of maxilliped completely fused (Fig. 3m, n) 9
9. Pereopods IV–VI dactyl with suture separating unguis (Fig. 3r) Pseudotanaidae Sieg (subfamily Cryptocopinae)
– Pereopods IV–VI dactyl without suture separating unguis (Fig. 3s) 10

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Fig. 3. a, Maxilla I with inner and outer endite, without palp; b, Maxilla I with only outer endite and palp; c, Antenna I with 3-jointed peduncle and 4- and 5-jointed flagellum; d, Antenna I with 3-jointed peduncle and 1- or 2-jointed flagellum; e, pereopod with ischium; f, Pereopod without ischium; g, Coxa of cheliped articulated with mediolateral margin of basis; h, Coxa of cheliped articulate with proximal margin basis; i, Cheliped with coxa; j, Maxilliped with coxa not fused (males); k, Maxilliped with basis not fused, without coxa; l, Maxilliped with basis incompletely fused; m, Maxilliped with basis completely fused; n, Maxilliped with basis completely fused, endite fused; o, Exopod of pleopod with thick and irregularly plumose marginal seta; p, Endopod of pleopod without marginal seta near basis; q, Inner margin of endopod of pleopod without terminal seta; r, Pereopod dactyl with suture separating unguis; s, Pereopod dactyl without suture.

10. Endites (inner lobes) of maxilliped fused (Fig. 3n); inner margin of endopod of pleopods without terminal seta (Fig. 3q); females with 1 pair of oostegites
Pseudotanaidae Sieg (subfamily Pseudotanainae)
– Endites (inner lobes) of maxilliped not fused; inner margin of endopod of pleopods without terminal seta (except *Tanaissus*, with terminal seta); females with 4 pairs of oostegites
Nototanaidae Sieg

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